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Discussions on the theme of the eighteenth session of the Commission on Science and Technology for Development, "Managing the transition from the Millennium Development Goals to the sustainable development goals: the role of science, technology and innovation"

Note by the Secretary-General

On 19 December 2014, the President of the Economic and Social Council addressed letters to the Chairs of the functional commissions of the Council requesting them to provide a contribution to the Council, for its consideration at the high-level segment, on the theme of the 2015 session, "Managing the transition from the Millennium Development Goals to the sustainable development goals: what will it take?".

The present note, prepared in response to that request, provides the Chair's summary the discussions held at two events organized during the eighteenth session of the Commission on Science and Technology for Development, held in Geneva from 4 to 8 May 2015:

(a) Ministerial round table entitled "Managing the transition from the Millennium Development Goals to the sustainable development goals: the role of science, technology and innovation";

(b) Panel discussion on the priority themes of the eighteenth session: "Strategic foresight for the post-2015 development agenda" and "Digital development".

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Summary by the Chair of the discussions on the theme of the eighteenth session of the Commission on Science and Technology for Development, "Managing the transition from the Millennium Development Goals to the sustainable development goals: the role of science, technology and innovation"

1. The Commission on Science and Technology for Development held its eighteenth session in Geneva from 4 to 8 May 2015. On 4 May, a ministerial round table was convened on the theme "Managing the transition from the Millennium Development Goals to the sustainable development goals: the role of science, technology and innovation" as a substantive contribution to the Economic and Social Council, for its consideration during the high-level segment, on the theme of the 2015 session, "Managing the transition from the Millennium Development Goals to the sustainable development goals: what will it take?".

2. The Deputy Secretary-General of the United Nations Conference on Trade and Development (UNCTAD), Joakim Reiter, provided the introductory remarks at the ministerial round table, which was moderated by the Chair of the eighteenth session of the Commission, Omobola Johnson (Nigeria). Statements were made by participants from Angola, Chile, Cameroon, the Congo, the Dominican Republic, Oman, Pakistan, Nigeria, the Sudan, Thailand and the United States of America. Statements were also made by the representatives of China, Morocco, Uganda, the United Kingdom of Great Britain and Northern Ireland and the European Union.

3. On 6 May, the Commission held a panel discussion to discuss the two priority themes of the eighteenth session: "Strategic foresight for the post-2015 development agenda" and "Digital development". The panel stimulated thinking on how strategic foresight and digital development could contribute to the transition from the Millennium Development Goals to the sustainable development goals.

4. The panel, moderated by the Chair, comprised the following experts: Sergio Bitar, Senior Fellow, Inter-American Dialogue, and former Minister of Public Works, Education and Mining of Chile; Shirley Malcom, Head of the Directorate of Education and Human Resources of the American Association for the Advancement of Science and member of the Gender Advisory Board; Geci Karuri-Sebina, Chair, South African Node at the Millennium Project; Michael Heister, Head of the Department for Vocational Teaching and Learning, National Programmes and Development Programmes, Federal Institute for Vocational Education and Training, Germany; Raul Katz, Director of Business Strategy Research, Institute for Tele-Information, Columbia University; Mark Graham, Senior Research Fellow and Associate Professor, Oxford Internet Institute; and Maurizio Bona, Adviser to the Director-General of the European Organization for Nuclear Research (CERN).

5. The panel heard statements by the representatives of Austria, Canada, Chad, Hungary, India, Kenya, Mexico, Thailand and the United States, as well as the European Union. Representatives of civil society organizations and the private sector also made statements.

6. The round table provided an opportunity for participants to consider the role that science, technology and innovation would need to play in promoting sustainable development and to discuss the associated challenges and opportunities. Participants

broadly acknowledged that science, technology and innovation were important for all three pillars of sustainable development: economic, social and environmental. They agreed that science, technology and innovation, including information and communications technology, should be seen as enablers for all the sustainable development goals and an important part of the "means of implementation" under goal 17.

7. Participants highlighted economic, social and environmental issues in which science, technology and innovation could play a key role. They included increasing productivity, improving the quality of products and adding value; diversifying the economy, increasing economic growth and raising the level of international competitiveness; creating new jobs and reducing poverty; improving agricultural production, promoting sustainable production and consumption patterns and ending hunger; curing diseases; managing natural resources effectively, creating new sources of energy and combating the effects of climate change, such as desertification, flooding and changing weather patterns; and enabling disaster planning and post-disaster recovery.

8. In considering the role of science, technology and innovation in the transition to the sustainable development goals, participants reported that the success rates of national experiments in harnessing the potential of science, technology and innovation in implementing the Millennium Development Goals had varied. National experience also showed differing levels in national capacity in the area of science, technology and innovation policy and strategies, in the availability of the required human resources, in the ability to finance investment in science, technology and innovation and research and development and in the degree of public policy support for science, technology and innovation.

9. Participants agreed that more needed to be done to benefit fully from science, technology and innovation and information and communications technology. They highlighted as priorities strengthening science, technology and innovation capacity; promoting private sector investment in science, technology and innovation; reinforcing international collaboration; creating jobs and developing human capital; using strategic foresight for the post-2015 development agenda; integrating the gender dimension; facilitating effective digital development; harnessing the big data revolution; and improving policy coherence and effectiveness. Those priorities would require political will and appropriate policy action at the national, regional and international levels. Those themes are elaborated on in the following paragraphs.

Strengthening science, technology and innovation capacity

10. There was consensus on the need to bridge science, technology and innovation capacity gaps, which could range from inadequate human resources and a lack of research infrastructure and training facilities to weak national innovation systems. Sufficient human capital was critical to technological upgrading and innovation. Speakers highlighted the need to increase spending on education and training, in particular science, technology, engineering and mathematics education. A representative noted that the key to increasing the probability of disruptive innovation in the future was to promote science, technology, engineering and mathematics education and basic scientific research. In that regard, several participants reported having recently revised school curricula to respond to science,

technology and innovation needs; build science, technology, engineering and mathematics skills; and make education more practical and better suited to meet the needs of industry.

11. Speakers noted the importance of innovative uses of information and communications technology to improve education services, especially in rural or disadvantaged areas. Participants stressed that innovative approaches to education were needed to bring students closer to addressing real-world problems. Some recommended using scholarships to guide students into more technical subjects or to improve student mobility and encourage researchers to shift between research and industry. A speaker suggested that multidisciplinary teams of students could be established to solve problems and develop new goods and services.

12. Mobilizing resources for investment in science, technology and innovation infrastructure represented an important challenge to many countries and was often an obstacle to building effective innovation systems in developing countries. It was recommended that science, technology and innovation infrastructure should become a key part of a country's basic infrastructure, along with transportation and energy infrastructure.

13. Participants also highlighted the issue of increasing gross expenditure on research and development in developing countries, in particular low-income countries and least developed countries. Specific attention was given to strengthening the role of the private sector, given that private investment in research and development in developing countries was often very low. Participants considered the need to establish national targets for gross expenditure on research and development as a percentage of gross domestic product (GDP). In some African countries, the target was based on regional agreements, for example, the Lagos Plan of Action for the Economic Development of Africa (1980-2000) of the Organization of African Unity and Africa's Science and Technology Consolidated Plan of Action adopted in 2005 by the New Partnership for Africa's Development and the African Union, both of which had set a minimum floor for gross expenditure on research and development at 1 per cent of GDP.

14. Speakers noted the need to encourage national technology development and international technology transfer, which could help to overcome technology gaps between countries.

15. Several participants noted that the Commission had helped to raise the visibility of the role of science, technology and innovation and information and communications technology in sustainable development and requested the Commission to continue its efforts in that regard. Others acknowledged the role of UNCTAD and the United Nations Educational, Scientific and Cultural Organization specifically, and the wider United Nations system more generally, in supporting the development of science, technology and innovation capacity in developing countries.

Promoting private sector investment in science, technology and innovation

16. It was said that many countries faced the challenge of how to promote private sector or enterprise development and encourage private sector investment in science, technology and innovation. Most speakers agreed that a dynamic private sector was essential to promoting sustainable development. They identified many

policy tools that could be used to build dynamic enterprises and encourage them to invest in the adoption of improved technology, skills development and innovation. They included promoting the development of small and medium-sized enterprises and entrepreneurship; instituting financing schemes for innovation or for research and development; providing tax credits for research and development; creating incubators or science and technology parks; developing clusters; using public-private partnerships; establishing national innovation days or innovation prizes or awards; promoting collaboration between industry and research institutes or broader linkages between industry, research institutes and Government; promoting both national and international technology transfer and diffusion; developing appropriate and well-functioning intellectual property rights systems; establishing technology transfer offices in universities; building linkages to foreign direct investment and foreign enterprises; and providing good basic infrastructure.

Reinforcing international collaboration

17. Speakers pointed out that international support, collaboration and partnerships in science and technology were crucial to achieving the sustainable development goals. Good global governance of research was necessary to overcome what was referred to as the North-South divide in research and science. Specific examples were provided of bilateral or multi-partner forms of international cooperation, including South-South, North-South and triangular cooperation. Participants expressed support for the proposal of the Secretary-General to forge a new United Nations partnership to facilitate the development of science, technology and innovation as a means of implementing the sustainable development goals. A speaker noted the importance of enterprises participating in regional and global value chains.

Creating jobs and developing human capital

18. There was general consensus that creating more jobs, in particular for young people, was a prerequisite for achieving the sustainable development goals. Participants highlighted the issue of youth unemployment and the need for the younger generation to build appropriate skills through science, technology and innovation. During the panel discussion on the priority themes, a panellist highlighted the role of vocational training institutions in preparing the future workforce, providing the example of the vocational training system in Germany, where students built their knowledge and skills simultaneously, in vocational training centres, at the workplace and in inter-company training centres. Such a system responded to the needs of the market by creating the skills that employers demanded.

19. Participants observed that information and communications technology could contribute to addressing the problem of unemployment. A panellist referred to the range of new connectivity-based businesses emerging in developing countries and their potential for job creation. Realizing the potential of those businesses would require affordable and reliable power, easy and affordable access to the requisite technology and capital goods, a supportive regulatory environment, programmes for skills development and an ability to make trusted and verifiable payments. At the same time, Governments needed to ensure that that digital work was done in accordance with national labour laws and tax regimes. Another speaker stressed that the economic impact of information and communications technology would have

higher multiplier effects, especially in terms of job creation, in areas in which there was higher digitization, i.e., those in which the level of access was higher, the work force more skilled and the information and communications technology infrastructure more reliable.

Using strategic foresight for the post-2015 development agenda

20. The panel noted that strategic foresight could be a useful tool in the transition from the Millennium Development Goals to the sustainable development goals. Strategic foresight was defined as the study and evaluation of future trends and "megatrends" in global development, together with their potential social, environmental and economic impacts. It could be a powerful tool to help policymakers and stakeholders to make better decisions. The panellists noted that the value of strategic foresight in the post-2015 development agenda would depend on how it was undertaken. Drawing on strategic foresight experiences in Latin America and Africa, the panellists identified good practices and lessons learned when conducting strategic foresight.

21. One panellist cited examples from the work of the Inter-American Dialogue, which had registered more than 800 long-term global and sector-specific foresight studies with a focus on Latin America. Those studies helped countries to identify the implications of global trends on national goals and strategies. In Latin America, the foresight exercises provided important ideas about possible instruments for achieving national goals. A key challenge was strengthening the link between the foresight findings and the decision-making process. In that context, the panellist underscored the importance of new institutions dedicated to foresight within governmental and non-governmental bodies to integrate foresight and strategic capacity into policymaking, which called for a high level of political commitment.

22. Another panellist focused on the lessons learned from the South African Node of the Millennium Project, a global, participatory futures research think tank, saying that Africa had a rich legacy of foresight exercises that had helped policymakers to identify the development challenges and opportunities that were specifically relevant for the continent. The panellist noted, however, that many of the foresight exercises were not accompanied by specific policy action, which could limit their impact and decrease their legitimacy. An absence of specific policy actions made it difficult to monitor and evaluate foresight to determine its value or effective contribution to development. The panellist highlighted the need to further democratize, systematize, institutionalize and operationalize foresight exercises to increase their impact on the development agenda. The panellist also drew attention to the Foresight for Development digital platform (www.foresightfordevelopment.org), which provided a repository of the most important and influential regional foresight content from futures practice, activities and sources.

23. A panellist highlighted four key trends emerging from the existing global foresight exercises that would be relevant to the implementation of sustainable development goals: the use of innovative technologies in education; the constraints on natural resource availability and the emergence of new paths of industrialization; the rise of emerging economies; and the demand for better governance. There was general consensus that inclusive and transparent foresight could generate national debates that would inform and educate public opinion and help to devise strategies consistent with national realities.

Integrating the gender dimension

24. A panellist underscored the need to apply a gender perspective when conducting strategic foresight. Given that women and men played different roles in the family and the community, the gender dimension was a major aspect of contextualizing development strategies. The emerging technology trends that could have an impact on the post-2015 development agenda needed to be considered in the light of the fact that the issues were experienced differently by women and men. Strategic foresight should therefore be conducted in a disaggregated manner.

Facilitating effective digital development

25. The panel agreed that information and communications technology was intricately linked to the core themes of the emerging sustainable development goals: transformation, sustainability and inclusivity. Changing digital technology was having transformative impacts on many facets of society. The panel discussed the transformation in the economy (in terms of creating jobs and new business models) and in politics (in terms of improving accountability and promoting participatory governance). With regard to inclusiveness, information and communications technology could contribute to bridging inequalities; conversely, information and communications technology could lead to new inequalities owing to a lack of digital access and capabilities. Efforts were therefore needed to improve the digital capabilities, competencies and complementary skills of populations. Information and communications technology could promote sustainability in other sectors (through smart applications) and build overall resilience. Panellists noted that information and communications technology was becoming a pervasive foundation for all aspects of development policy. In that context, participants highlighted the importance of strengthening all components of the digital ecosystem — technological infrastructure, data infrastructure, financial infrastructure, institutional infrastructure and human infrastructure — to ensure maximum multiplier effects of information and communications technology.

Harnessing the big data revolution

26. The participants in the round table discussed the role of the global science, technology and innovation community in exploiting the full potential of the "big data revolution" in implementing the sustainable development goals. The science, technology and innovation community could create more tools to convert data into policy-relevant information, which would contribute to more accurate analyses of developmental problems. Science, technology and innovation could also facilitate the transfer of disaggregated data across borders. The representative of CERN suggested that the organization could assist in the United Nations data revolution initiatives, in terms of knowledge and technology.

Improving policy coherence and effectiveness

27. Another key area of concern was establishing effective national institutional frameworks for organizing or "governing" science, technology and innovation policies. Speakers reported wide diversity in national arrangements. Many participants agreed, however, that science, technology and innovation policy cut across ministries, departments and agencies, which meant that a "whole-of-government" approach, or effective means of coordination across those bodies, was

critical to achieving significant impact from investment in science, technology and innovation.

28. A number of speakers observed that national science, technology and innovation plans and strategies were a useful tool for promoting sustainable development, given that they helped countries to identify areas of high priority and the means for making progress. In turn, those priorities provided a means of channelling their limited resources into a manageable policy agenda. Speakers from Africa referenced regional efforts to promote science, technology and innovation development, notably the Science, Technology and Innovation Strategy for Africa 2024, adopted by the African Union in 2014. A participant noted the need for coherence between science, technology and innovation policy and other key national policies to maximize the development impact of science, technology and innovation policy action. Several speakers stressed that policy leadership and adequate policy continuity could facilitate more effective science, technology and innovation planning and enable more stable science, technology and innovation investment patterns, among both private enterprises and the public sector. Ensuring an adequate level of continuity in policy direction and in financing patterns was as important for progress in scientific research as it was for research institutes, including government ministries, departments and agencies, to operate effectively.

29. More broadly, the achievement of the sustainable development goals called for improved policy effectiveness in all sectors. Participants noted that the sustainable development goals were far more ambitious than the Millennium Development Goals; attaining them would require tremendous resources. Improved policy effectiveness and coherence could ameliorate the use of available resources. Science, technology and innovation could assist by helping to identify and promote evidence-based policies in all sectors.